

**REMARKS**

**STATUS OF CLAIMS**

Claims 1-9 and 11-43 are pending in this reissue application. Original Claim 10 has been canceled without prejudice. Original claims 1-9, 11-14, 17, 19, 22, 23, 26-30, 32 and 33 have been amended. No new matter has been added.

**EXPLANATION OF PRESENT CLAIM CHANGES AND OF SUPPORT  
IN THE DISCLOSURE OF THE PATENT FOR THE CHANGE**

Claim 1 has been twice amended. By the present amendment, Claim 1 has been further amended to incorporate the subject matter of Claim 10, which depended indirectly on Claim 1. Support for this amendment is found in Original Claims 1, 8 and 10.

Claim 12 has been twice amended. By the present amendment, Claim 12 has been further amended to depend on Claim 1. Support for this amendment is found in Original Claims 1, 10 and 12. The present amendment does not further limit the scope of Claim 12.

Claims 26 and 27 have been twice amended. By the present amendment, Claims 26 and 27 have been further amended to replace the remaining term "fixed" with --first-- in accordance with the previous amendment to these claims. The present amendment does not further limit the scope of these claims.

Claim 28 has been twice amended. By the present amendment, Claim 28 has been further amended to depend on new Claim 40. Support for this amendment is found in Original Claims 1, 2, 26 and 28. The present amendment does not further limit the scope of Claim 28.

Claim 29 has been amended to depend on new Claim 40. Support for this amendment is found in Original Claims 1, 2, 26 and 29. The present amendment does not further limit the scope of Claim 29.

Claim 30 has been twice amended. By the present amendment, Claim 30 has been amended to depend upon Claim 40 as supported by Original Claims 1, 2, 26 and 30. The present amendment has no limiting effect on the scope of Claim 30.

Claim 33 has been twice amended. By the present amendment, Claim 33 has been further amended to depend upon new Claim 43 as supported by Original Claims 1, 2, 32 and 33. The present amendment does not further limit the scope of claim 33.

**CLAIM 35**

Claim 35 is a new claim corresponding to the subject matter of previous Claim 6 rewritten in independent form. Therefore, new Claim 35 has the same scope as previous Claim 6.

**CLAIM 36**

Claim 36 is a new claim corresponding to the subject matter of previous Claim 7 rewritten in independent form. Therefore, new Claim 36 has the same scope as previous Claim 7.

**CLAIM 37**

Claim 37 is a new claim corresponding to the subject matter of previous Claim 15

rewritten in independent form. Therefore, new Claim 37 has the same scope as previous Claim 15.

**CLAIM 38**

Claim 38 is a new claim corresponding to the subject matter of previous Claim 17 rewritten in independent form. Therefore, new Claim 35 has the same scope as previous Claim 17.

**CLAIM 39**

Claim 39 is a new claim corresponding to the subject matter of previous Claim 18 rewritten in independent form. Therefore, new Claim 39 has the same scope as previous Claim 18.

**CLAIM 40**

Claim 40 is a new claim corresponding to the subject matter of previous Claim 26 rewritten in independent form. Therefore, new Claim 40 has the same scope as previous Claim 26.

**CLAIM 41**

Claim 41 is a new dependent claim corresponding to the subject matter of Claim 8, but written to depend upon new Claim 40. Support for this new claim is found in Original Claims 1, 8 and 26.

**CLAIM 42**

Claim 42 is a new claim corresponding to the subject matter of previous Claim 31 rewritten in independent form. Therefore, new Claim 42 has the same scope as previous Claim 31.

**CLAIM 43**

Claim 43 is a new claim corresponding to the subject matter of previous Claim 32 rewritten in independent form. Therefore, new Claim 43 has the same scope as previous Claim 32.

**THE INVENTION**

The present invention pertains broadly to a device utilizing light diffraction for measuring translation, rotation or velocity, such as may be used in an optical device for measuring relative movements. In particular, in accordance with the present invention, a device for utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 1.

In accordance with another embodiment of the present invention, a device utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 35. In accordance with yet another embodiment of the present invention, a device utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 36. In accordance with still another embodiment of the present invention, a device utilizing light diffraction for measuring

translation, rotation or velocity, is provided having the elements recited in Claim 37. In accordance with another embodiment of the present invention, a device utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 38. In accordance with another embodiment of the present invention, a device utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 39. In accordance with another embodiment of the present invention, a device utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 40. In accordance with another embodiment of the present invention, a device utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 42. In accordance with yet another embodiment of the present invention, a device utilizing light diffraction for measuring translation, rotation or velocity, is provided having the elements recited in Claim 43.

Various other embodiments of the present invention are provided in the dependent claims. The embodiments, in accordance with the present invention, all have the advantage of providing a relatively simple construction that has great measuring accuracy, and which can be made within relatively large manufacturing tolerances without adversely affecting the accuracy of measurements.

### **THE REJECTION**

Claims 26-30 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

Claims 1, 2, 4-7, 20-23 and 34 stand rejected under 35 U.S.C. § 102(b) as clearly

anticipated by Ishizuka (Japanese Document JP 06-194144A, hereafter, the "Ishizuka Reference"). Claims 3, 13, 14, 19, 24 and 25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the Ishizuka Reference.

Claims 8 and 9 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the Ishizuka Reference in view of Huber et al. (U.S. Patent 5,424,833, hereafter the "Huber Patent").

#### **APPLICANT'S ARGUMENTS**

Applicant gratefully acknowledges the Examiner's determination that claims 10-12, 15-18 and 26-33 contain allowable subject matter (Office Action dated February 11, 2005, at 6, lines 7-13).

In view of the present amendment, Claims 1-9 and 11-43 are now in compliance with 35 U.S.C. § 112.

Claim 1 now incorporates the allowable subject matter of claim 10. Therefore, Claim 1 is allowable for the reasons of record. Claims 2-9, 11-27, 31, 32 and 34 depend, either directly or indirectly, upon Claim 1 and are likewise allowable.

New Claim 37 corresponds to Claim 15, which contains allowable subject matter, written in independent form and is allowable for the reasons of record. New Claim 38 corresponds to Claim 17, which contains allowable subject matter, written in independent form and is allowable for the reasons of record. New Claim 39 corresponds to Claim 18, which contains allowable subject matter, written in independent form and is allowable for the reasons of record.

New Claim 40 corresponds to Claim 26, which contains allowable subject matter, written in independent form and is allowable for the reasons of record. Claims 28-30 and 41 depend upon Claim 40 and are likewise allowable.

New Claim 42 corresponds to Claim 31, which contains allowable subject matter, written in independent form and is allowable for the reasons of record. New Claim 43 corresponds to Claim 32, which contains allowable subject matter, written in independent form and is allowable for the reasons of record. Claim 33 depends upon Claim 43, and is likewise allowable.

### **The Art Rejection**

Anticipation under 35 U.S.C. § 102 requires showing the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim. Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984). On the other hand, a patentability analysis under 35 U.S.C. § 103 requires (a) determining the scope and content of the prior art, (b) ascertaining the differences between the prior art and the claimed subject matter, (c) resolving the level of ordinary skill in the pertinent art, and (d) considering secondary considerations that may serve as indicia of nonobviousness or obviousness. Graham v. John Deere Co. of Kansas City, 148 U.S.P.Q. 459, 467 (1966). Furthermore, a proper rejection under Section 103 further requires showing (1) that the prior art would have suggested to a person of ordinary skill in the art that they should make the claimed device or carry out the claimed process, (2) that the prior art would have revealed to a person of ordinary skill in the art that in so making

or doing, there would have been a reasonable expectation of success, and (3) both the suggestion and the reasonable expectation of success must be found in the prior art and not in the applicants' disclosure. *In re Vaeck*, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991).

In the present case, the Section 102 rejection is untenable and must be withdrawn because the Ishizuka Reference does not teach each and every element, as arranged in Claims 35 and 35. Furthermore, the Huber Patent cannot make up this deficiency in the scope of the teachings of the Ishizuka Reference.

#### **The Ishizuka Reference**

The Ishizuka Reference teaches a "rotation information detecting device" as shown in Figure 5A, wherein the photo-sensing device (PD) and the light emitting device (H') are formed on the plane of the radial grating of the transparent grating (GLA). See EP 0 589 477 A2, col. 7, lines 47-58 (EP 0 589 477 A2 corresponds to JP 06-194144A as shown by the Delphion Integrated View, [www.delphion.com/details?pn=EP00589477A2&s\\_FAMILY=1](http://www.delphion.com/details?pn=EP00589477A2&s_FAMILY=1), attached hereto along with a copy of EP 0 589 477 A2). In addition, as shown in Figure 3, the Ishizuka Reference teaches that the photo-sensing device (PD) and the planar light emitting light source (H') may be arranged on the same single planar substrate (PB), (See EP 0 589 477 A2, col. 7, lines 24-36), or that, as shown in Figure 4, the photo-sensing device (PD) and the light source (H') may be arranged on a lead frame (LF) or a printed circuit board and the optical unit is jointed to a mold unit (Mo), (col. 7, lines 37-54). However, the Ishizuka Reference does not teach, or even suggest, the limitation wherein (i) "the detector is integrated in a semiconductor substrate bearing the second assembly" as recited in Claim 35,



and wherein (ii) “the light source is integrated in a semiconductor substrate bearing the second grating assembly” as recited in Claim 36.

### **The Huber Patent**

The Huber Patent teaches an “inferential linear and angular displacement apparatus having scanning and scale grating respectively greater than and less than the source wavelength” as shown in Figure 1. The Huber Patent teaches an arrangement (1) that includes a light source (2), a scanning or index grating (3), a reflective scale grating (4) and a photodetector (5), (col. 2, lines 23-29). As shown in Figure 1, the light source (2) and the photodiode (5) are at remote locations relative to the gratings (3), (4). Thus, the Huber Patent does not teach, or even suggest, the limitation wherein (i) “the detector is integrated in a semiconductor substrate bearing the second assembly” as recited in Claim 35, and wherein (ii) “the light source is integrated in a semiconductor substrate bearing the second grating assembly” as recited in Claim 36.

Because neither the Ishizuka Reference, nor the Huber Patent, teach or suggest the limitation wherein (i) “the detector is integrated in a semiconductor substrate bearing the second grating assembly” as recited in Claim 35, and wherein (ii) “the light source is integrated in a semiconductor substrate bearing the second grating assembly” as recited in Claim 36, the scope of the teachings of these references is insufficient to support a rejection of these claims under either Section 102 or Section 103.

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**Conclusion**

In view of the present amendment, Claims 1-9 and 11-43 are in compliance with 35 U.S.C. § 112. Furthermore, Claims 1-9, 11-27, 31-34 and 37-43 are allowable for the reasons of record. Lastly, because the scope and content of the teachings of the Ishizuka Reference and the Huber Patent fails to teach, or even suggest, that (i) “the detector is integrated in a semiconductor substrate bearing the second assembly” as recited in Claim 35, and (ii) “the light source is integrated in a semiconductor substrate bearing the second grating assembly” as recited in Claim 36, the Examiner’s Section 102 rejection standing against the subject matter of these claims is untenable and must be withdrawn.

For all of the above reasons, Claims 1-9 and 11-43 are in condition for allowance, and a prompt notice of allowance is earnestly solicited.

Questions are welcomed by the below signed attorney of record for the Applicant.

Respectfully submitted,

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